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1. (Amended) A semiconductor product comprising:

a low-k dielectric layer;

a nitrogen base layer formed of nitrogen-doped silicon carbide and including N-H base groups capable of diffusing therefrom; and

an oxygen-containing layer interposed directly between said low-k dielectric layer and said nitrogen base layer.

2. The semiconductor product as in claim 1, wherein said oxygen-containing layer comprises a TEOS (tetraethyl orthosilicate) oxide film.



- 4. (Amended) The semiconductor product as in claim 1, wherein said nitrogen base layer comprises one of a barrier layer film, an etch-stop layer, and a hardmask film.
- 5. The semiconductor product as in claim 1, wherein said oxygen-containing layer comprises oxygen-doped silicon carbide.



- 6. (Amended) The semiconductor product as in claim 1, wherein said nitrogen base layer comprises a surface of a further film.
- 7. The semiconductor product as in claim 1, in which said semiconductor product includes:

a lower low-k dielectric layer disposed over a barrier layer;

an etch-stop layer disposed over said lower low-k dielectric layer;

an upper low-k dielectric layer disposed over said etch-stop layer;

a hardmask layer disposed over said upper low-k dielectric layer;

said nitrogen base layer comprising one of said barrier layer and said etch-stop layer;

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said oxygen-containing layer comprising a TEOS oxide layer interposed between said nitrogen base layer and one of said lower low-k dielectric layer and said upper low-k dielectric layer.



- 8. (Amended) The semiconductor product as in claim 7, further comprising each of said barrier layer, said etch-stop layer and said hardmask layer being a nitrogen base layer, and a TEOS oxide layer interposed between each said nitrogen base layer and each said adjacent low-k dielectric layer.
- 9. (Amended) The semiconductor product as in claim 7, wherein said barrier layer comprises one of said nitrogen base layer formed of nitrogen-doped silicon carbide, and silicon nitride; and said etch-stop layer comprises the other of said nitrogen base layer formed of nitrogen-doped silicon carbide, and silicon nitride.
- 10. The semiconductor product as in claim 1, wherein said N-H base groups comprise one of amines and amino-silicates.
- 11. The semiconductor product as in claim 1, wherein said low-k dielectric layer includes a dielectric constant less than 3.5.
- 12. The semiconductor product as in claim 1, wherein said low-k dielectric layer comprises one of an organo-silicate-glass and SiOC-H.
  - 13. (Amended) A semiconductor product comprising:



- a barrier layer formed over a substrate;
- a lower low-k dielectric layer formed over said barrier layer;
- an etch-stop layer formed over said lower low-k dielectric layer;
- an upper low-k dielectric layer formed over said etch-stop layer;
- a hardmask layer disposed over said upper low-k dielectric layer; and
- a TEOS (tetraethyl orthosilicate) oxide film interposed at least one of between said lower low-k dielectric layer and said barrier layer, between said lower low-k dielectric layer and said etch-stop layer, between said etch-stop layer and said upper low-k dielectric layer, and between said upper low-k dielectric layer and said hardmask,

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at least one of said barrier layer and said etch-stop layer formed of nitrogen-doped silicon carbide.

- 14. The semiconductor product as in claim 13, wherein each of said barrier layer and said etch-stop layer include N-H base groups therein.
- 15. The semiconductor product as in claim 13, in which a two-tiered opening is formed to extend through said hardmask layer, said upper low-k dielectric layer, said etch-stop layer, said lower low-k dielectric layer, and said barrier layer.
- 16. The semiconductor product as in claim 15, further comprising a conductive material filling said two-tiered opening, said conductive material serving as an interconnect medium.
- 17. The semiconductor product as in claim 13, in which an opening is formed to extend through said hardmask layer, said upper low-k dielectric layer, said etch-stop layer and said lower low-k dielectric layer, and further comprising a DUV photoresist formed within said opening.



- 26. (New) A semiconductor product comprising:
- a low-k dielectric layer;
- a nitrogen base layer including N-H base groups capable of diffusing therefrom; and an oxygen-doped silicon carbide layer interposed directly between said low-k dielectric layer and said nitrogen base layer.
- 27. (New) The semiconductor product as in claim 26, wherein said nitrogen base layer is formed of nitrogen-doped silicon carbide.